

TOP SECRET



WARNING
THIS IS A RECORD COPY
THIS REPORT IS NOT TO BE LOANED OR
DESTROYED UNDER ANY CIRCUMSTANCES.
THE ORIGINAL MANUSCRIPT NEGATIVES
HAVE BEEN DESTROYED.

PIR

PHOTOGRAPHIC INTELLIGENCE REPORT

I
M
A
D

MEASUREMENTS OF ICE-FREE AREAS

AT FIVE SOVIET ATOMIC ENERGY INSTALLATIONS

DECLASS REVIEW by NIMA/DOD

CIA/PIR 73007

DATE AUGUST 1966
COPY 41
PAGES 20

TOP SECRET

25X1
25X1

TOP SECRET

25X1
CIA/PIR-73007

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

MEASUREMENTS OF ICE-FREE AREAS AT FIVE SOVIET ATOMIC ENERGY INSTALLATIONS

The size of ice-free and thin-ice areas resulting from hot water being discharged into a lake or river is indicative of the amount of power consumption or generation in the adjacent installation. As part of the effort by analysts to determine the power consumption or generation at certain Soviet atomic energy installations, measurements have been made on [] photography of the ice-free and thin-ice areas in adjacent bodies of water. This report presents measurements made from photography obtained during the winter of 1965-1966 of the following atomic energy installations:

Dodonovo	56-16N 93-28E
Kyshtym	55-43N 60-45E
Tomsk	56-36N 84-54E
Verkh Neyvinskiy	57-16N 60-06E
Zaozernyy	56-06N 94-31E

The measurements are summarized in Table 1 and the photography from which the measurements were obtained is shown in Figures 2 through 17. Measurements of ice-free and thin-ice areas resulting from hot water discharge from associated thermal power plants are included. The annotated photographs are arranged in chronological order.

The appearance of melted areas with intervening refrozen ice areas occurs at the Dodonovo Atomic Energy Complex. These areas are referred to as "Transition Zones" and may contain one or a number of isolated ice-free areas.

Measurements: All measurements were made by the NPIC Technical Intelligence Division. Accuracy statements for the individual area measurements are given in Table 1.

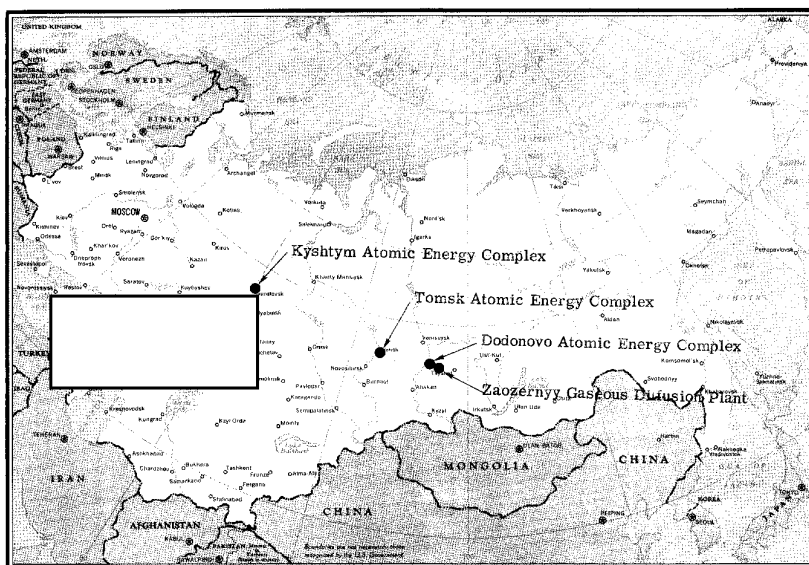


FIGURE I. Location Map

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

TOP SECRET

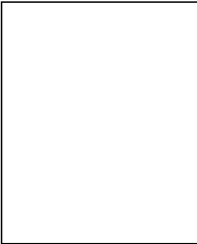


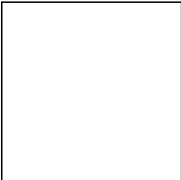
25X1
25X1

TOP SECRET

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

CIA/PIR-73007

TABLE I

MISSION	DATE	ZULU TIME	LOCATION OF MEASUREMENTS	MEASUREMENTS SQ. FT.	ACRES	ACCURACY STATEMENT	FIGURE NUMBER									
<u>DODONOVO ATOMIC ENERGY COMPLEX</u>																
	061325	Downstream from Dodonovo Thin Ice Ice Free Downstream "Transition Zone" Thin Ice Ice Free	+ 3% of sq. ft. figure					2A & 2B								
	052834	Downstream from Dodonovo Thin Ice Ice Free Downstream "Transition Zone"* Thin Ice Ice Free	+ 3% of sq. ft. figure					7A & 7B								
	060530	Downstream from Dodonovo Thin Ice Ice Free Downstream "Transition Zone" Thin Ice Ice Free	+ 6% of sq. ft. figure					12								
<u>KYSHTYM ATOMIC ENERGY COMPLEX</u>																
	080556	Lake Kyzltash Thin Ice Ice Free	+ 3% of sq. ft. figure									5				
	080556	Lake Ulagach (Argayash TETS) Thin Ice Ice Free Slush Ice Refrozen Ice	+ 3% of sq. ft. figure									6				
<u>TOMSK ATOMIC ENERGY COMPLEX</u>																
	063551	Tom River Thin Ice Ice Free	+ 3% of sq. ft. figure													4
	072210	Tom River Thin Ice Ice Free	+ 5% of sq. ft. figure	17												
<u>VERKH NEYVINSKIY GASEOUS DIFFUSION PLANT</u>																
	080531	Neyvo Rudyanskiy Prud Thin Ice Ice Free Slush Ice	+ 3% of sq. ft. figure													8
	080531	Verkh Neyvinskiy Prud Thin Ice Ice Free Slush Ice	+ 3% of sq. ft. figure													9
	080531	Verkhniy Tagil Prud (Thermal Power Plant) Thin Ice Ice Free Slush Ice	+ 3% of sq. ft. figure					10								

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

TOP SECRET

TOP SECRET

CIA/PIR-73007

CIA/PIR-73007

* The "Downstream Transition Zone" also contains two areas of refrozen ice, totaling 595.8 acres and three isolated open water areas.

** These are measurements of two areas of thin ice on the western side of Lake Kyziltash, not directly related to the melt on the eastern side of the lake. The reason for their existence is unknown.

*** Two water intakes were not measured.

25X1

25X1

25X1

25X1

25X1
25X1

TOP SECRET

25X1
CIA/PIR-73007

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1



FIGURE 2A. YENISEY RIVER - Dudinka Atomic Energy Complex
Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

TOP SECRET

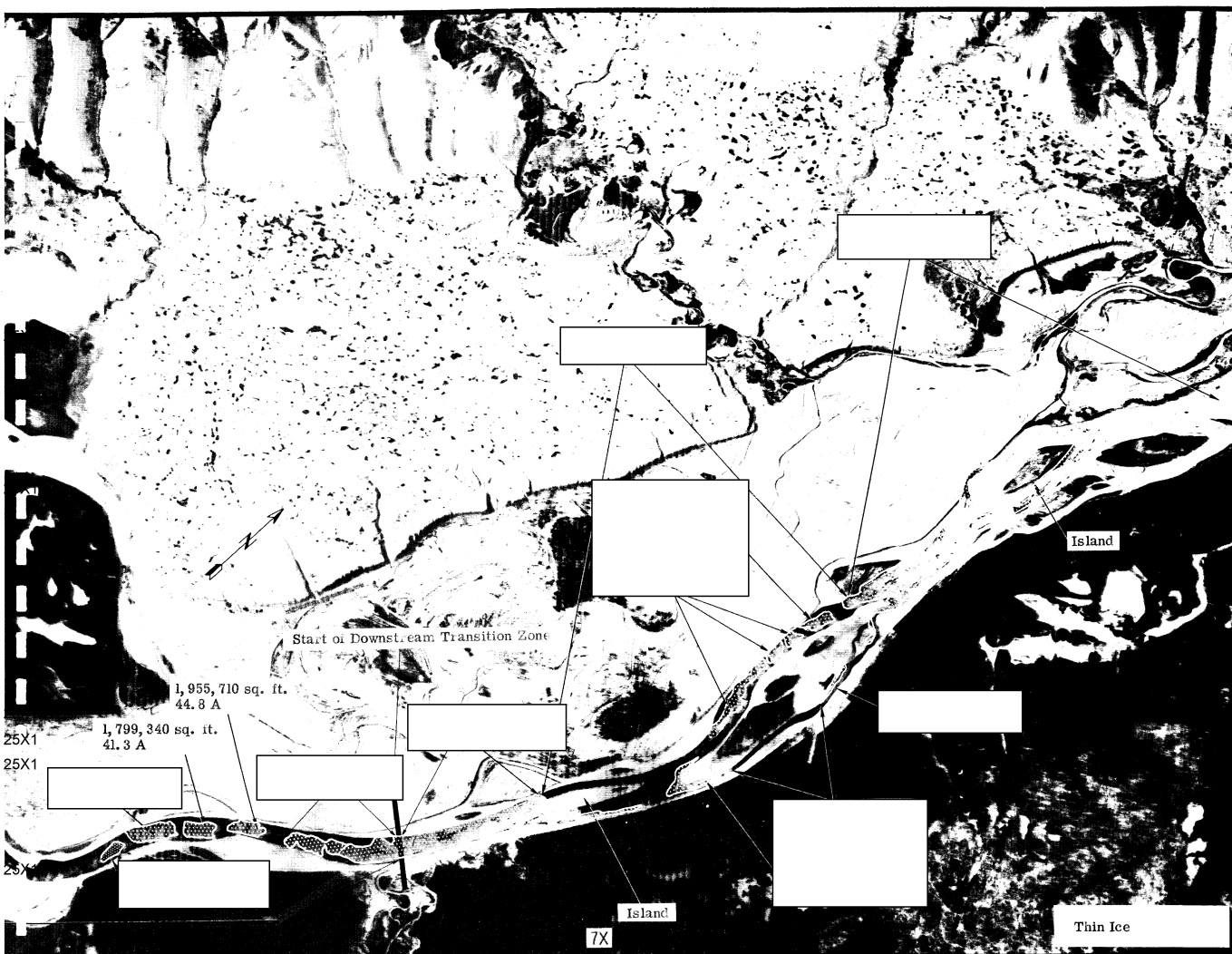
25X1
25X1

TOP SECRET

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

CIA/PIR-73007

25X1



25X1

25X1

25X1

FIGURE 2B. YENISEY RIVER - Dodonovo Atomic Energy Complex

TOP SECRET

25X1

25X1

25X1

25X1

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

TOP SECRET

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

TCS #4202/66
CIA/PIR-73007

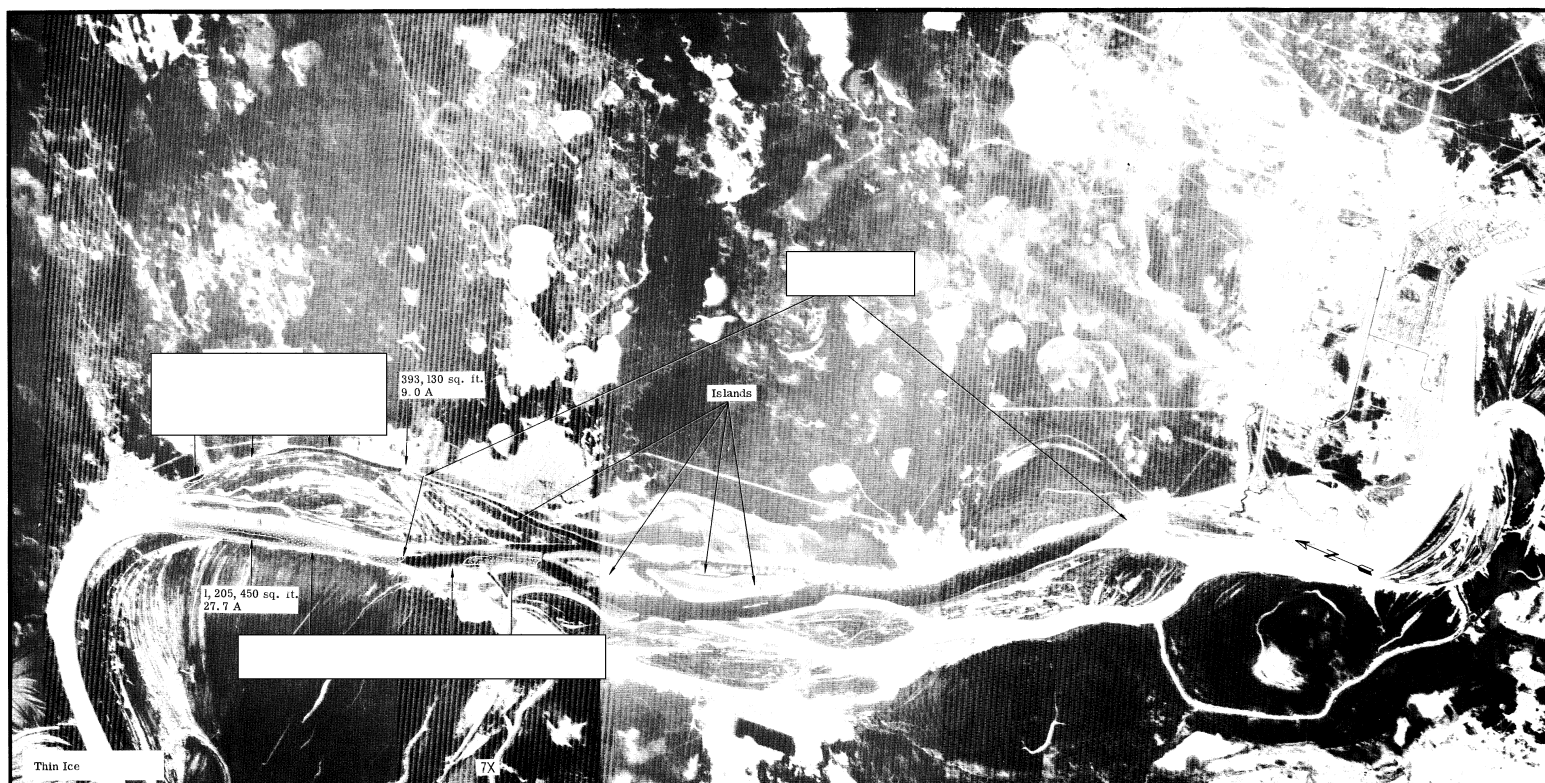


FIGURE 4. TOM RIVER - Tomsk Atomic Energy Complex -

- 7 -

TOP SECRET

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

TOP SECRET

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

CIA/PIR-73007

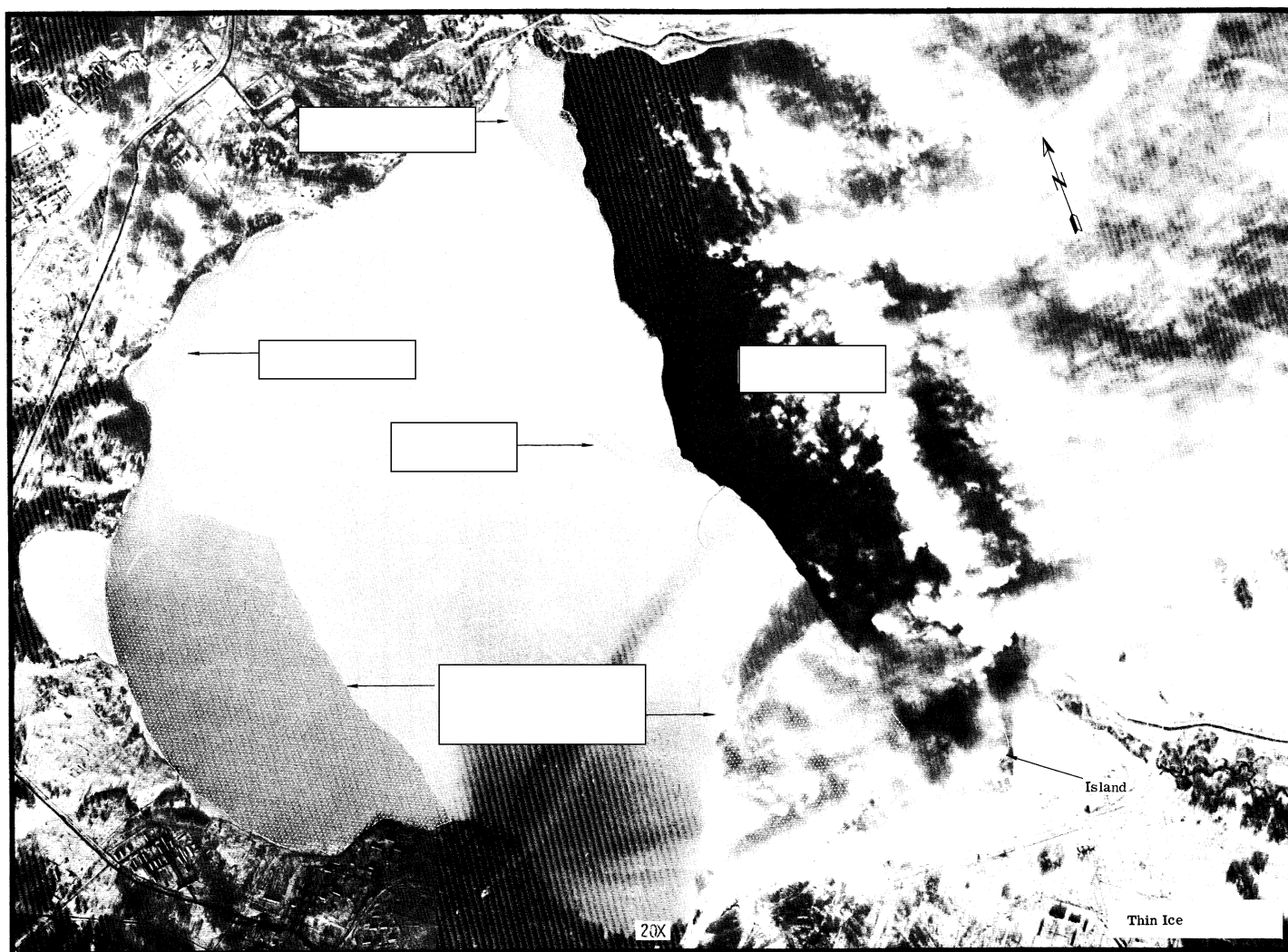


FIGURE 5. LAKE KYZLTASH - Kyshtym Atomic Energy Complex

TOP SECRET

25X1
25X1

TOP SECRET

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

CIA/PIR-73007

25X1

25X1

25X1

25X1

25X1

25X1

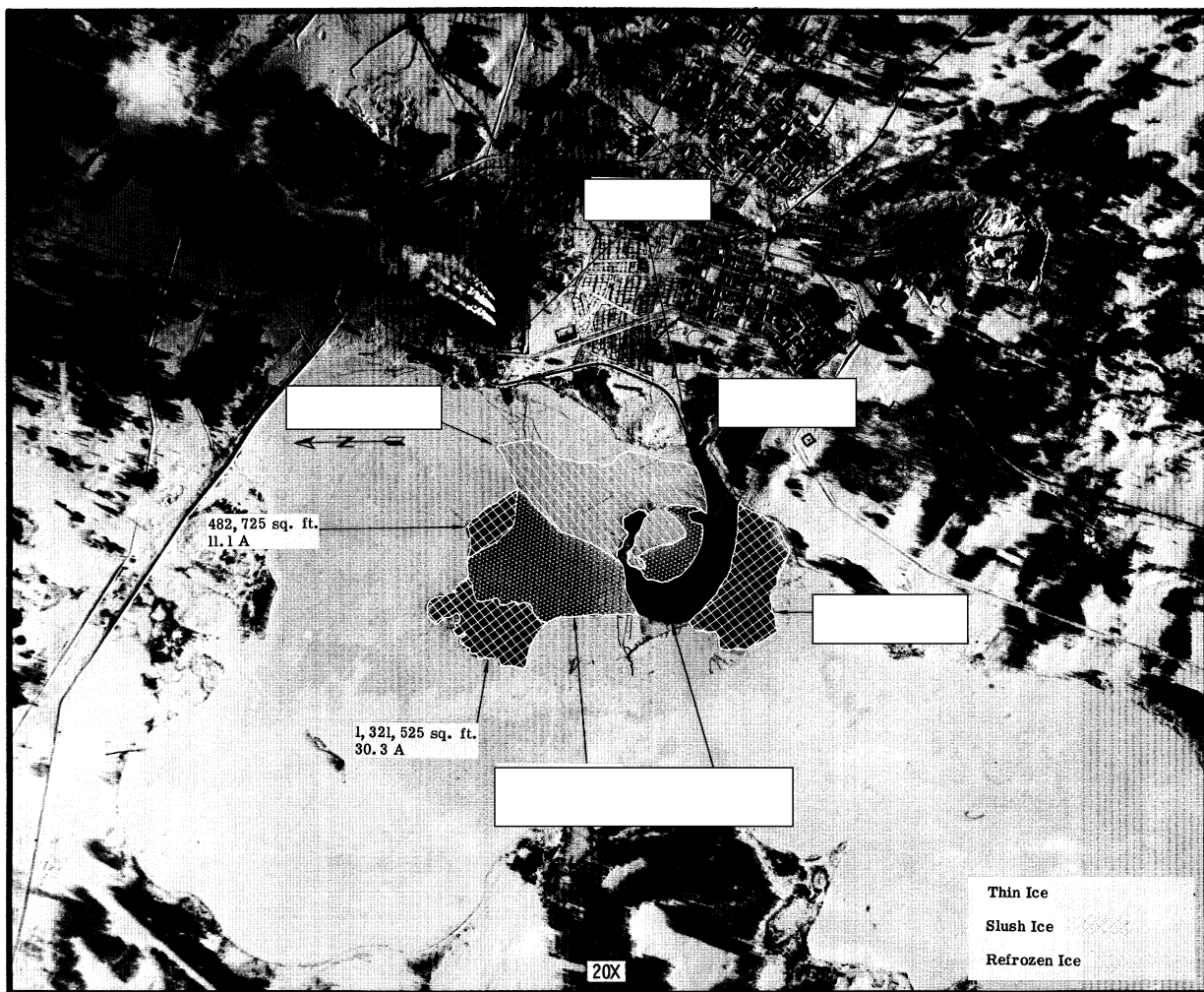


FIGURE 6. LAKE ULAGACH - Argayash TETS Near Kyshtym Atomic Energy Complex -

TOP SECRET

25X1

25X1

25X1

25X1
25X1

TOP SECRET

25X1
CIA/PIR-73007

Approved For Release 2006/02/07 : CIA-RDP02T06408R004200010015-1

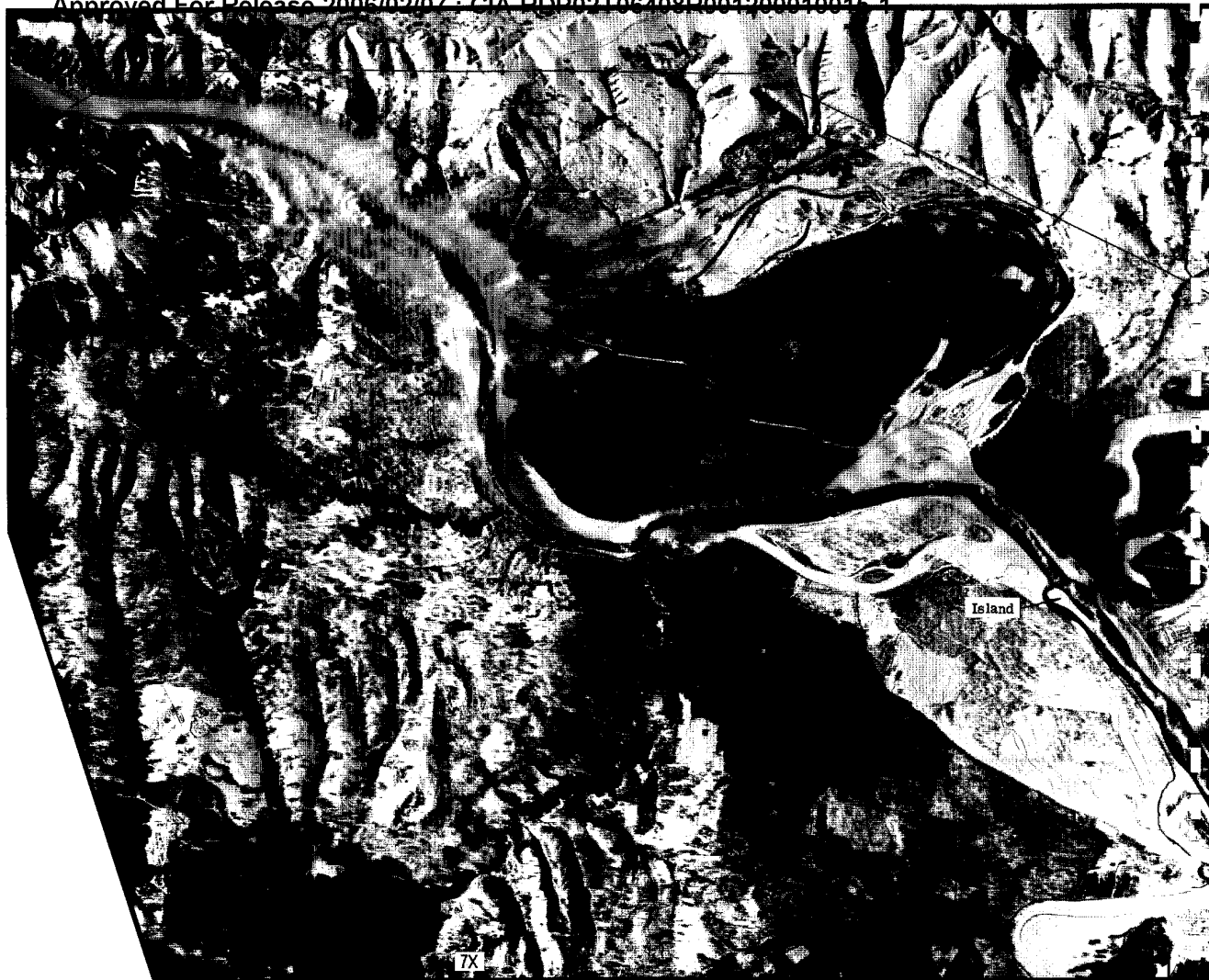


FIGURE 7A. YENISEY RIVER - Dodonovo Atomic Energy Complex
Approved For Release 2006/02/07 : CIA-RDP02T06408R004200010015-1

25X1
TOP SECRET

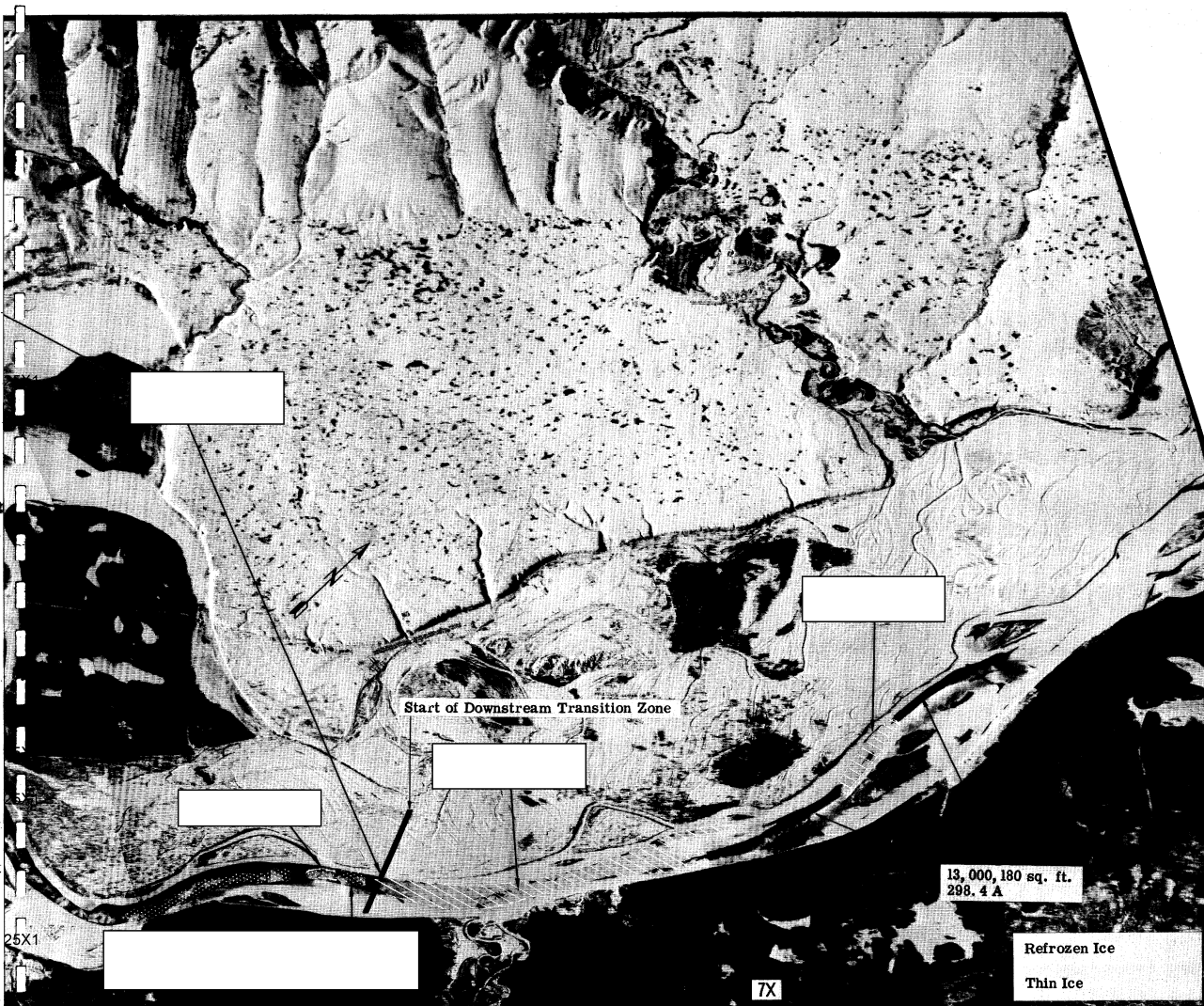
25X1
25X1

TOP SECRET

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

CIA/PIR-73007

25X1



25X1

FIGURE 7B. YENISEY RIVER - Dudonovo Atomic Energy Complex

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

TOP SECRET

25X1

25X1

25X1

25X1

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

Next 2 Page(s) In Document Exempt

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

TOP SECRET

25X1

CLM/PIC-73007

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1



FIGURE 12. YENISEY RIVER - Dodonovo Atomic Energy Complex -

25X1

25X1

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

TOP SECRET

25X1

25X1

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

Next 2 Page(s) In Document Exempt

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

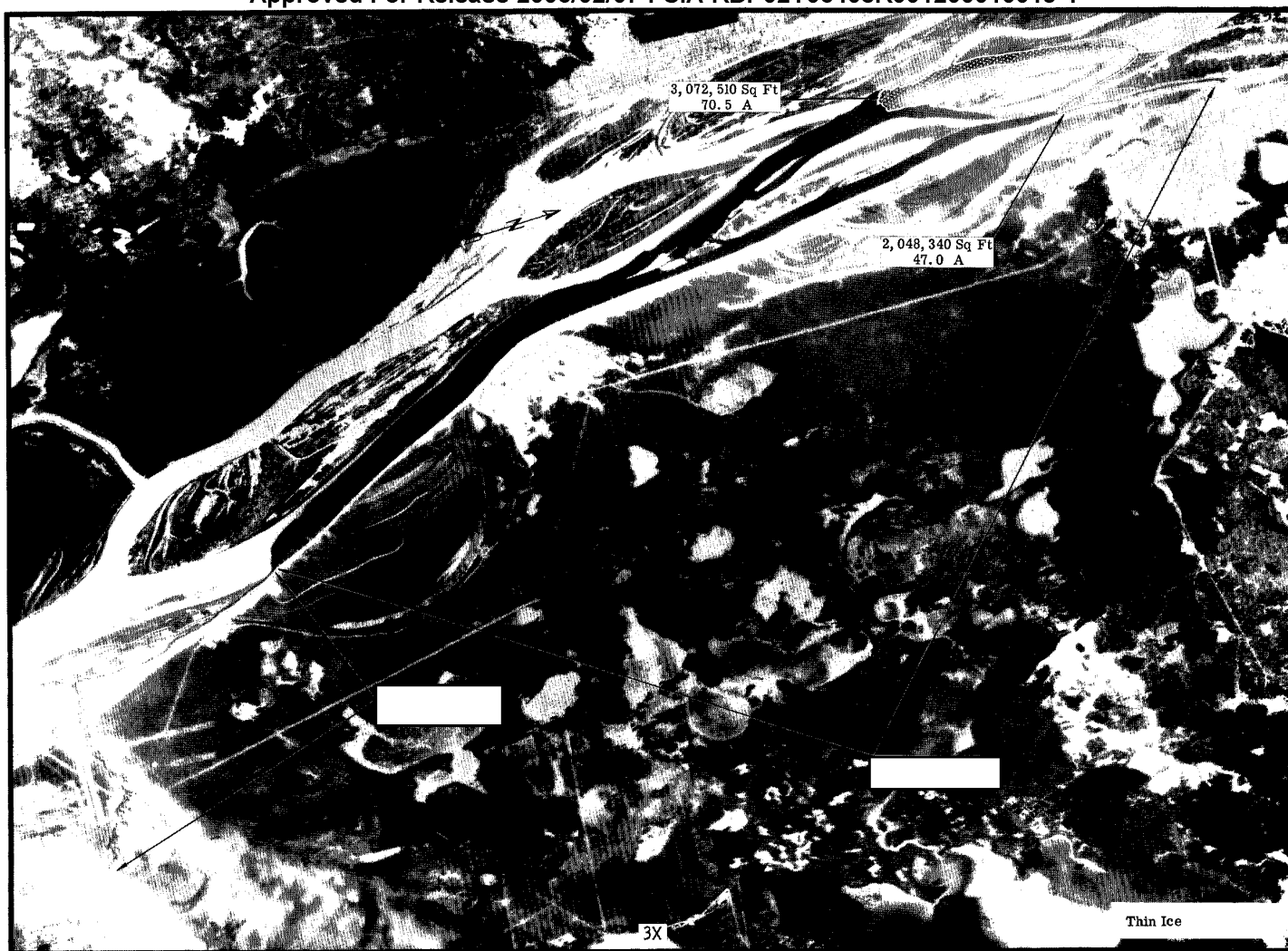
25X1

TOP SECRET

CIA/PIR-73004

25X1

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1



25X1

25X1

25X1

FIGURE 17. TOM RIVER - Tomsk Atomic Energy Complex -
Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

TOP SECRET

25X1

25X1

25X1
25X1

TOP SECRET

Approved For Release 2006/02/07 : CIA-RDP02T06408R001200010015-1

CIA/PIR-73007

25X1

REFERENCES



REQUIREMENT NO.

C-SI5-83,058

CIA/IAD PROJECT NO.

30456-6

25X1

TOP SECRET

25X1

25X1

Approved For Release 2008/02/07 : CIA-RDP02T06408R001200010015-1

~~TOP SECRET~~

Approved For Release 2008/02/07 : CIA-RDP02T06408R001200010015-1

~~TOP SECRET~~